Southeast Climate Consortium Water Group

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Key Personnel

- Upton Hatch (water group leader), Mark Masters and Gandhi Bhattarai, Auburn University - Bio-Economic Modeling.
- Sajjad Ahmad and Reinaldo Garcia, University of Miami - Urbanization, Water Availability and Economic Development.
- David Stocksbury and Pierre Gerard-Marchant, University of Georgia - Hydrology Modeling.
- Cheryl Porter and Keith Ingram, University of Florida - Stream Flow and Water Quality.

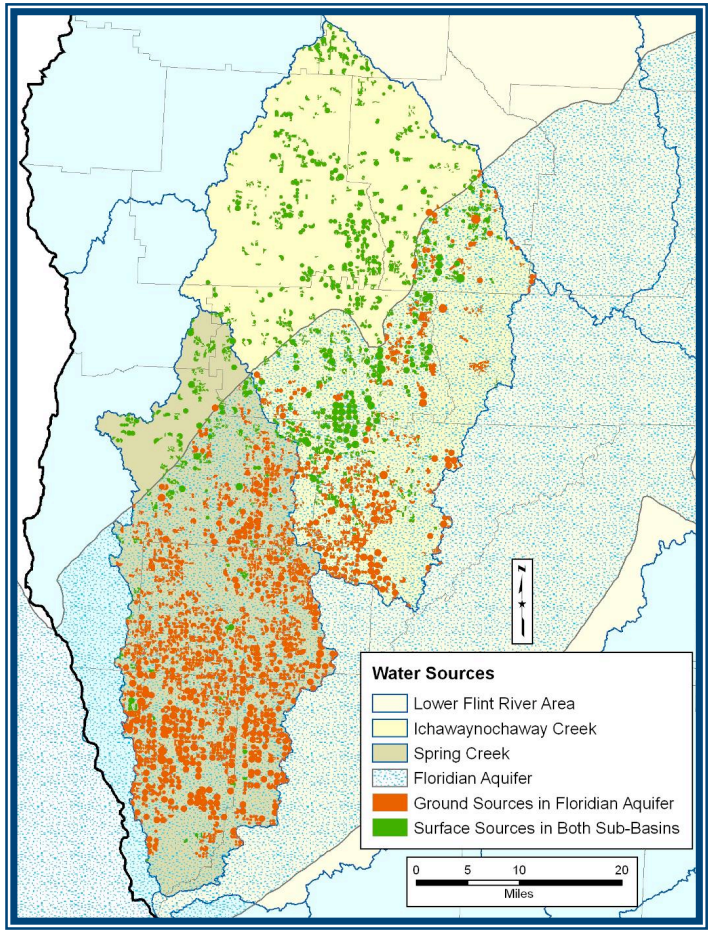
SECC Water Group Themes

- Assessment of stakeholder needs & establishment of partnerships
- Understanding and describing effects of climate variability on water resources
- Evaluating alternative watershed models and integrating them with crop models to predict effects of climate variability on water resources and management
- Integrating hydrological models with down-scaled experimental climate forecasts
- Integrating biophysical and economic models for assessing potential environmental and economic value of climate forecast use in managing water resources and analyzing alternative decisions
- Developing and evaluating climate information and decision support tools for water resource management, and extension of information and tools to decision makers

SECC Water Group Guiding Principles

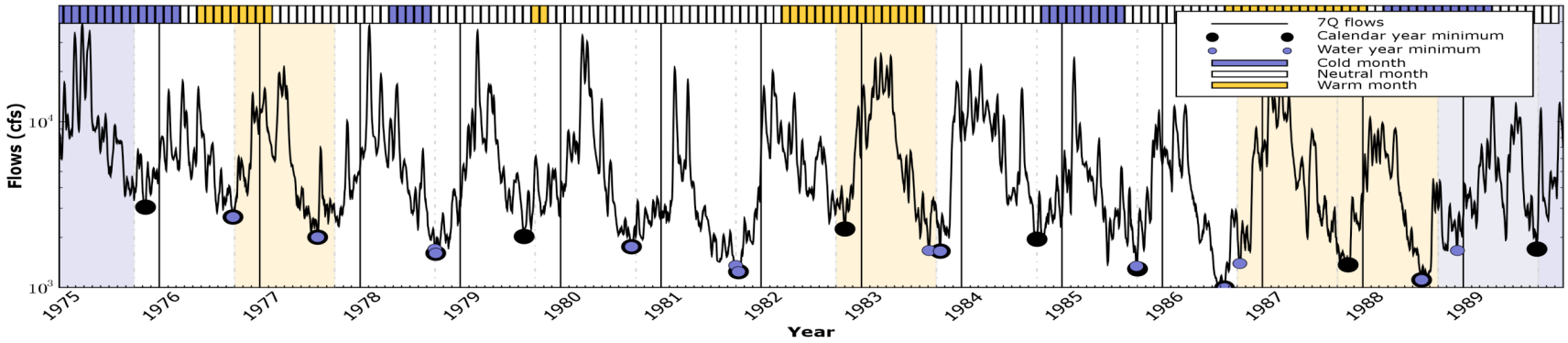
- Focus on reducing risks to water resources under climate variability
- Address applications of climate information at a watershed level to assure relevance
- Evolve toward region-wide application products
- Establish a common platform for integrating tools from different research activities
- Conduct multidisciplinary research on physical, biological & social sciences to address the complex issues of water resources risk
- Promote inter-institutional collaboration among SECC members
- Design research projects with clearly identified outputs, including refereed publications and other products

Climate Information for SW GA Regional Water Planning



- Concentration of irrigation may threaten endangered species during drought
- New and pending state water policies look to further regulate ag use
- Of particular interest are all surface water withdrawals and those ground water withdrawals out of the Upper Floridian (greatest stream impact)
- Earliest available climate predictors critical for farm-level planning and yearly drought declarations or irrig. suspension
- County, basin, and region-wide agronomic and economic impacts of alternative management strategies to be examined

Minimum Daily Stream Flow by ENSO Phase on Flint River

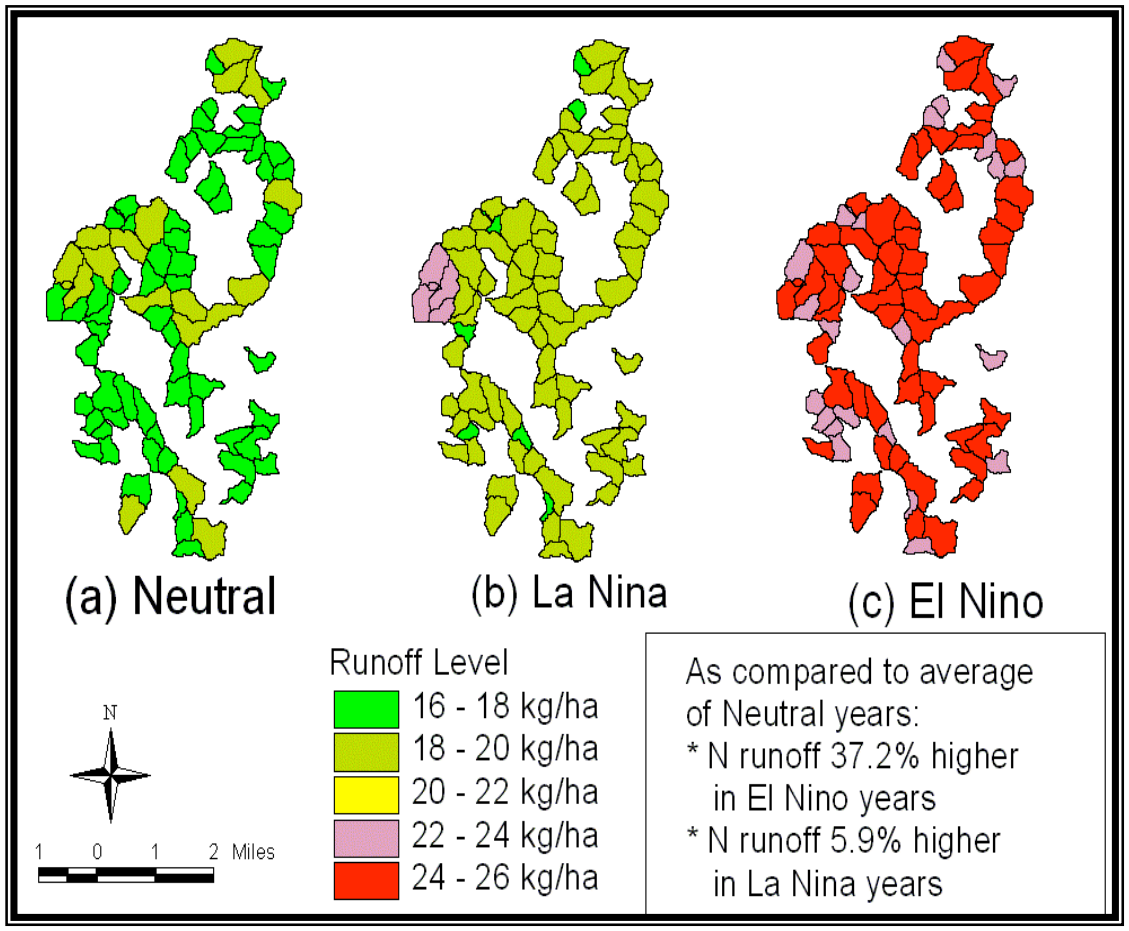


Major Research Questions

- Amount of stream flow variations attributed to climate
- Significance of stream flow variations
- Lags between stream flow and precipitations

ENSO Phase and Water Quality:

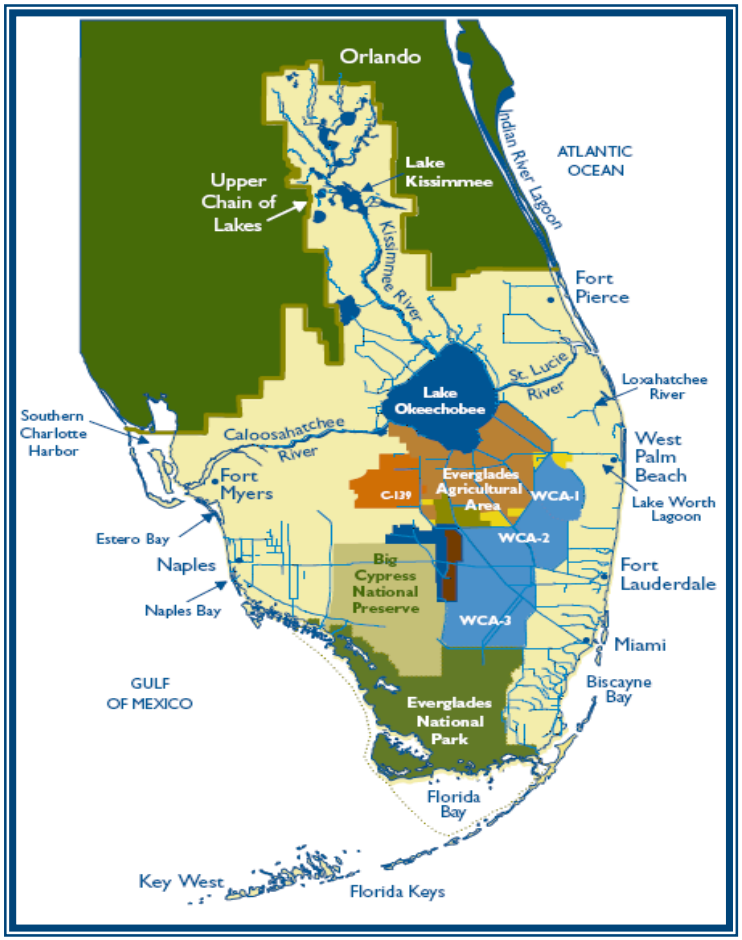
Bioeconomic Modeling of Agricultural Production and Water Quality



Research Questions

- Land management practices and water quality
- Adjustment in crop production for climate change information
- Optimum level of production under environmental constraints and climate forecasting

Challenges of Regional Water Planning in South Florida

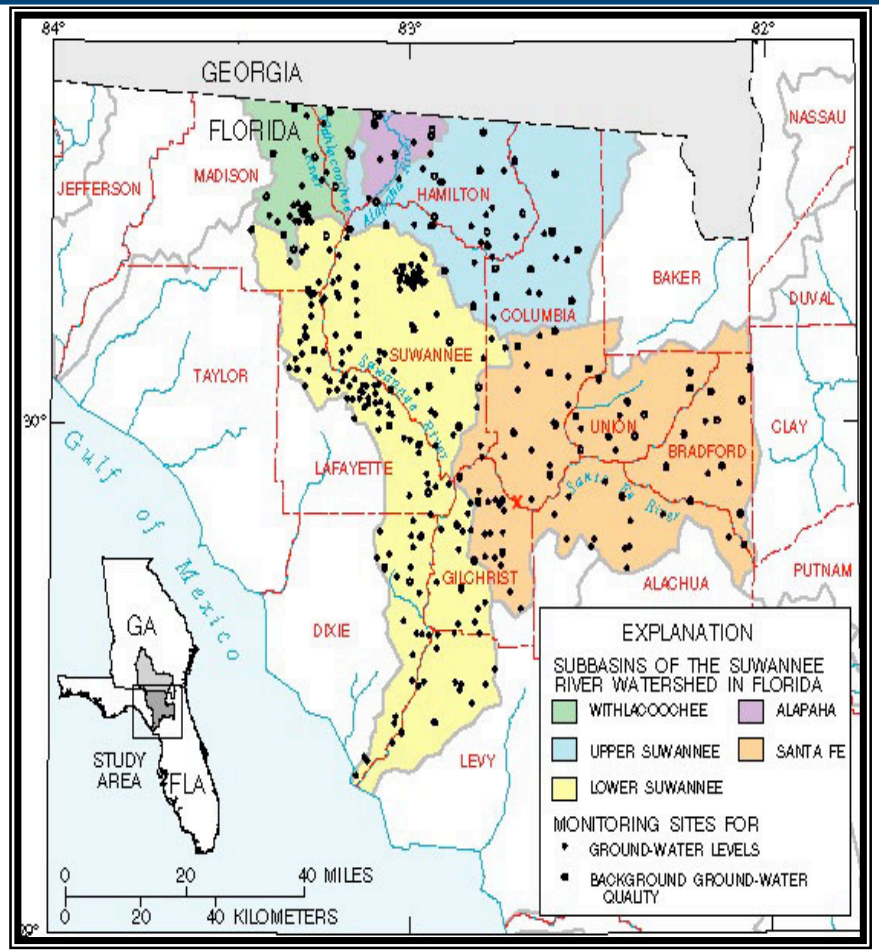


- Increasing water demand
- Salt water intrusion
- Min. levels & flows for Lake Okeechobee, Biscayne aquifer & Everglades
- Flood Control
- Water Quality
- Climate Variability/Change

Research Questions

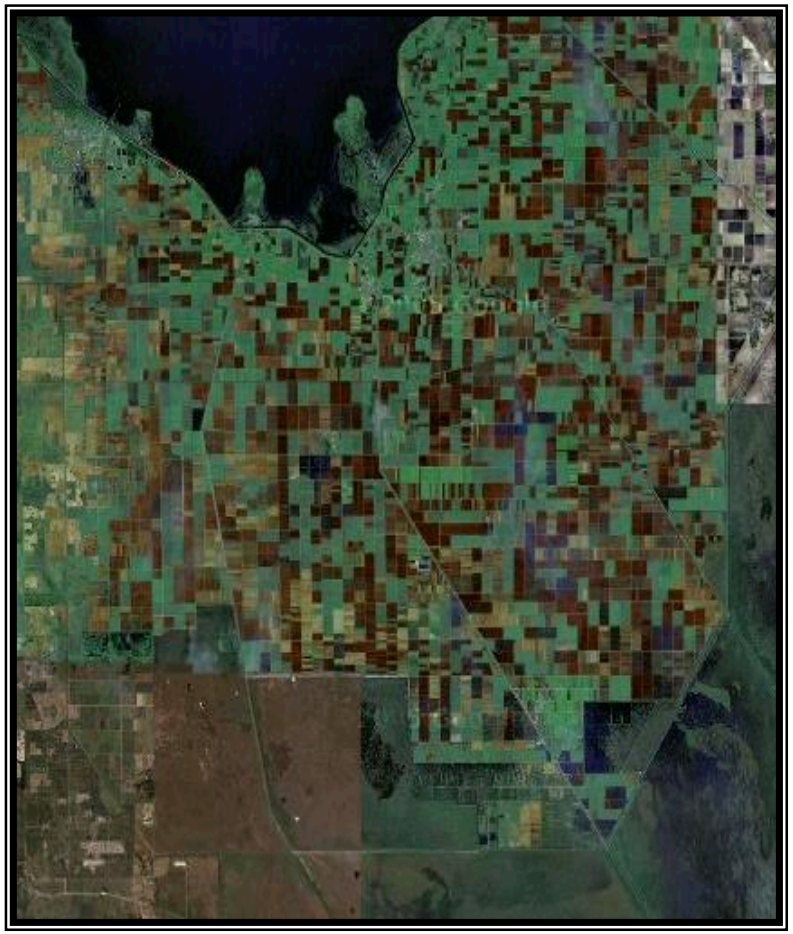
- Major changes in terms of population growth, land use, water demand, and water availability - short and long term
- Major effects of climate variability and change on water system
- Policies for water management in response to growth and climate change

Suwannee & Santa Fe Watersheds Groundwater Monitoring Stations



- N sources are of major importance in Northern Florida
- Improved climate predictions can support agricultural management decisions to minimize impacts to surface and groundwater quality
- Linked watershed and crop models can be used to assess both environmental and economics impacts of BMPs

Evaluation of Climate Variability on Water Resources and Crop Yield in South Florida



- Analyze impacts of inter-annual precipitation variability on water resources and crop production in a pilot South Florida watershed
- Apply Watershed Assessment Model (WAM) linked to the crop yield model (DSSAT)
- Evaluate the response of different crops to spatial climate variations defined by the ENSO phase
- Compare results with similar studies being conducted by the SECC in other regions